WHAT IS CLAIMED IS:

1. A microscope comprising at least one light source, at least one detector, and two objectives (2), one of the objectives (2) being arranged on each of the two sides of the specimen plane (3) and the objectives (2) being directed toward one another and having a common focus; at least one beam splitter (5) for distributing the illuminating light (6) to the objectives (2), and a beam recombiner (5) for combining the detected light (7) coming from the objectives (2), being provided in the illumination/detection beam path (4); a modular assembly (8) for grouping the objectives (2) and the beam splitter/beam recombiner (5) therein and an interface (9) is provided with the modular assembly (8) for connection to the illumination/detection beam path (4) of the microscope (1).

2. The microscope as defined in Claim 1, **wherein** the modular assembly (8) is connected with its interface (9) instead of a conventional objective or objective nosepiece to the microscope (1).

3. The microscope as defined in Claim 1, **wherein** the modular assembly (8) has a baseplate (11) on which optical components of the modular assembly (8) are mounted.

4. The microscope as in Claim 3, **wherein** the optical components of the modular assembly (8) are arranged in a housing (12).

5. The microscope as defined in Claim 4, **wherein** the housing (12) is hermetically sealed.

6. The microscope as defined in Claim 1, **wherein** the modular assembly (8) comprises a component having a defined and at least largely constant heat emission.

7. The microscope as defined in Claim 6, **wherein** the component is dimensioned so that emitted heat is suitable for keeping the modular assembly (8) at a constant operating temperature.

8. The microscope as defined in Claim 7, **wherein** the component is a laser light source, preferably a diode laser.

9. The microscope as defined in Claim 3, **wherein** the optical components of the modular assembly (8) are designed, and are installed and arranged on the baseplate (11), in such a way that temperature-related expansions compensate for one another and therefore have no effect on the optical alignment state of the modular assembly (8).

10. The microscope as defined in Claim 1, **wherein** the modular assembly (8) comprises a specimen stage (14) that is arranged between the objectives (2).

11. The microscope as defined in Claim 1, **wherein** the modular assembly (8) comprises an optical system (21) for displacing the pupil of the objectives (2) used in the modular assembly (8).

12. The microscope as defined in Claim 11, **wherein** the optical system (21) for displacing the pupil is implemented by way of a virtual image.

13. The microscope as defined in Claim 11, **wherein** the optical system (21) for displacing the pupil is implemented by way of a real intermediate image.

14. The microscope as defined in Claim 11, **wherein** displacement of the pupil is implemented by replacement of the tube lens of the microscope (1).

15. The microscope as defined in Claim 11, **wherein** displacement of the pupil is implemented by way of an optical system (21) arranged in the illumination/detection beam path (4) close to the coupling-in point.

16. The microscope as defined in Claim 1, **wherein** the modular assembly (8) comprises at least one mirror (16), arranged in the illumination/detection beam path (4), for deflecting the illumination/deflection beam (4).

17. The microscope as defined in Claim 16, **wherein** a shutter (18) is arranged in the illumination/detection beam path (4) between the coupling-in point and the beam splitter (5), preferably between the coupling-in point and the mirror (16).

18. The microscope as defined in Claim 17, **wherein** a mirror (16) is placed in front of each of the objectives (2) in order to deflect the illumination/detected light (4).

19. The microscope as defined in Claim 18, **wherein** the modular assembly (8) comprises a shutter (18) in the illumination/detection beam path (4) between the beam splitter (5) and the mirror (16).

20. The microscope as defined in Claim 17, **wherein** the modular assembly (8) comprises optical components in order to influence interference phenomena, in particular for phase compensation.

21. The microscope as defined in Claim 20, **wherein** the modular assembly (8) comprises an interferometer which consists essentially of a Sagnac, Michelson, Twyman-Green, and Mach-Zehnder interferometer for creating an interferometric beam path.

22. The microscope as defined in Claim 1, **wherein** the modular assembly (8) comprises optical components for implementing 4Pi, SWFM,I^2M, I^3M, or I^5M microscope technology.

23. The microscope as defined in Claim 1, **wherein** an actuator (15) is associated respectively with individual components for the positioning of individual components and/or for alignment of the assembly (8).

24. The microscope as defined in Claim 1, **wherein** detectors are provided for the detection of various parameters of the operating state of the modular assembly (8).

25. The microscope as defined in Claim 24, **wherein** the detectors consist essentially of mechanical, electronic, and optical sensors.

26. The microscope as defined in Claim 1, **wherein** at least one light source, with which an auxiliary beam can be generated for alignment of the components, is provided for the modular assembly (8).

27. The microscope as defined in Claim 26, **wherein** the auxiliary beam is generated as an interferometric beam, and alignment is accomplished automatically.

28. The microscope as defined in Claim 26, **wherein** the light source is an integral constituent of the modular assembly (8).

29. The microscope as defined in Claim 26, **wherein** the light source is an external light source and coupled into the modular assembly (8).

30. The microscope as defined in Claims 26, **wherein** the light source consists essentially of a solid-state laser, diode laser, and a gas laser.

31. A confocal laser scanning microscope comprising at least one detector, and two objectives (2), one of the objectives (2) being arranged on each of the two sides of the specimen plane (3) and the objectives (2) being directed toward one another and having a common focus; at least one beam splitter

(5) for distributing the illuminating light (6) to the objectives (2), and a beam recombiner (5) for combining the detected light (7) coming from the objectives (2), being provided in the illumination/detection beam path (4); a modular assembly (8) for grouping the objectives (2) and the beam splitter/beam recombiner (5) therein and an interface (9) is provided with the modular assembly (8) for connection to the illumination/detection beam path (4) of the microscope (1).

32. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) is connected with its interface (9) instead of a conventional objective or objective nosepiece to the microscope (1).

33. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) has a baseplate (11) on which optical components of the modular assembly (8) are mounted.

34. The confocal laser scanning microscope as in Claim 33, **wherein** the optical components of the modular assembly (8) are arranged in a housing (12).

35. The confocal laser scanning microscope as defined in Claim 34, **wherein** the housing (12) is hermetically sealed.

36. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) comprises a component having a defined and at least largely constant heat emission.

37. The confocal laser scanning microscope as defined in Claim 36, **wherein** the component is dimensioned so that emitted heat is suitable for keeping the modular assembly (8) at a constant operating temperature.

38. The confocal laser scanning microscope as defined in Claim 37, **wherein** the component is a laser light source, preferably a diode laser.

39. The confocal laser scanning microscope as defined in Claim 33, **wherein** the optical components of the modular assembly (8) are designed, and are installed and arranged on the baseplate (11), in such a way that temperature-related expansions compensate for one another and therefore have no effect on the optical alignment state of the modular assembly (8).

40. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) comprises a specimen stage (14) that is arranged between the objectives (2).

41. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) comprises an optical system (21) for displacing the pupil of the objectives (2) used in the modular assembly (8).

42. The confocal laser scanning microscope as defined in Claim 41, **wherein** the optical system (21) for displacing the pupil is implemented by way of a virtual image.

43. The confocal laser scanning microscope as defined in Claim 41, **wherein** the optical system (21) for displacing the pupil is implemented by way of a real intermediate image.

44. The confocal laser scanning microscope as defined in Claim 41, **wherein** displacement of the pupil is implemented by replacement of the tube lens of the microscope (1).

45. The confocal laser scanning microscope as defined in Claim 41, **wherein** displacement of the pupil is implemented by way of an optical system (21) arranged in the illumination/detection beam path (4) close to the coupling-in point.

46. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) comprises at least one mirror (16), arranged in the illumination/detection beam path (4), for deflecting the illumination/deflection beam (4).

47. The confocal laser scanning microscope as defined in Claim 46, **wherein** a shutter (18) is arranged in the illumination/detection beam path (4) between the coupling-in point and the beam splitter (5), preferably between the coupling-in point and the mirror (16).

48. The confocal laser scanning microscope as defined in Claim 47, **wherein** a mirror (16) is placed in front of each of the objectives (2) in order to deflect the illumination/detected light (4).

49. The confocal laser scanning microscope as defined in Claim 48, **wherein** the modular assembly (8) comprises a shutter (18) in the illumination/detection beam path (4) between the beam splitter (5) and the mirror (16).

50. The confocal laser scanning microscope as defined in Claim 47, **wherein** the modular assembly (8) comprises optical components in order to influence interference phenomena, in particular for phase compensation.

51. The confocal laser scanning microscope as defined in Claim 50, **wherein** the modular assembly (8) comprises an interferometer which consists essentially of a Sagnac, Michelson, Twyman-Green, and Mach-Zehnder interferometer for creating an interferometric beam path.

52. The confocal laser scanning microscope as defined in Claim 31, **wherein** the modular assembly (8) comprises optical components for implementing 4Pi, SWFM,I^2M, I^3M, or I^5M microscope technology.

53. The confocal laser scanning microscope as defined in Claim 31, **wherein** an actuator (15) is associated respectively with individual components for the positioning of individual components and/or for alignment of the assembly (8).

54. The confocal laser scanning microscope as defined in Claim 31, **wherein** detectors are provided for the detection of various parameters of the operating state of the modular assembly (8).

55. The confocal laser scanning microscope as defined in Claim 54, **wherein** the detectors consist essentially of mechanical, electronic, and optical sensors.

56. The confocal laser scanning microscope as defined in Claim 31, **wherein** at least one light source, with which an auxiliary beam can be generated for alignment of the components, is provided for the modular assembly (8).

57. The confocal laser scanning microscope as defined in Claim 56, **wherein** the auxiliary beam is generated as an interferometric beam, and alignment is accomplished automatically.

58. The confocal laser scanning microscope as defined in Claim 56, **wherein** the light source is an integral constituent of the modular assembly (8).

59. The confocal laser scanning microscope as defined in Claim 56, **wherein** the light source is an external light source and coupled into the modular assembly (8).

60. The confocal laser scanning microscope as defined in Claims 56, **wherein** the light source consists essentially of a solid-state laser, diode laser, and a gas laser.

61. The confocal laser scanning microscope as defined in Claim 31, **characterized by** a fluorescent incident-light unit, a binocular tube, and an interface (9) to a confocal unit.